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**A test of the spiral of silence theory on young adults' use of social networking sites for
political purposes**

by

Kuan-Ju Chen

A thesis submitted to the graduate faculty

in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

Major: Journalism and Mass Communication

Program of Study Committee:

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Ames, Iowa

2011

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ABSTRACT

This study aims to test the two steps of the spiral of silence theory: (1) assessment of the climate of opinion and (2) willingness to speak out about controversial political issues with respect to young adults' political use of the social networking site, Facebook, to communicate with their close friends and broader circle of friends. Since the spiral of silence was initially proposed at time when traditional media dominance, this study illuminates the application of the theory on the emerging communicative technology.

The results show close friends were the most important group to assess the climate of opinion for both general political issues and the issue of same-sex marriage in particular. There are gender differences that women engaged in Facebook more frequently for maintaining relationships with friends whereas men reported more political use of Facebook. Women had higher use and perceived value of Facebook to communicate with both their close friends and broader circle of friends about the issue of same-sex marriage than men for the two steps of spiral of silence.

Results of the study contribute to understanding how spiral of silence theory might operate in an age of social media such as Facebook. Evidence also indicates that there are still gender differences in political communication.

CHAPTER 1

INTRODUCTION AND STATEMENT OF THE PROBLEM

In 2004, Mark Zuckerberg combined the traditional idea of informing incoming college freshmen about universities through printed materials with up-to-date online systems to initiate one of the most popular social networking sites, Facebook, which currently has more than 500 million active users (Facebook, 2010; Petersen, 2010). Today, millions of Internet users spend a large portion of their time on similar social networking sites (SNS) because their multiple functions have broken barriers of time and space for interactivity. These sites are said to have “upgraded” people from interval communication to simultaneous communication.

In Facebook and other SNS, users are able to post personal profiles and interact with “friends.” A series of surveys initiated by the Pew Internet & American Life Project (Lenhart, 2009) found that 97% of SNS users report using those sites to connect with others. Other uses include maintaining a profile, chatting with friends, initiating group activities, and posting items of common interest. Understandably, the use of these sites is higher in countries with high Internet penetration. People also say they exploit these sites to keep track of current events, a purpose traditionally relegated to the “traditional” mass media. Additionally, a growing number of organizations use these sites officially or informally to keep stakeholders and the general public informed of their activities.

Young educated people were the target of the original Facebook, and they remain one of the most active audiences using SNS. To urge this young electorate to be more engaged in political activities, public officials and political parties have exploited social networking sites as a venue for political news. President Obama's successful bid for the presidency of the United States in 2008 was seen as the triumph of an aggressive online campaign. His Facebook profile alone attracted millions of active supporters.

Indeed, online forums offer unique advantages as a way of creating robust political debate in a democratic society. Because SNS have attracted both women and men as users, they offer the possibility of increasing the political knowledge and involvement of women, an audience segment that in the United States has been found frequently to lag behind men in both areas (Campbell et al., 1964 and 1980; Eagly, 1987). In addition, studies have suggested that these sites might reduce traditional constraints to openly speaking out on political topics. Those reluctant to express opinions or show their political stance in face-to-face conversations find it less threatening to express themselves through a computer-mediated chat room (Ho & McLeod, 2008).

The current study uses spiral of silence theory to determine the extent to which young males and females differ in the ways by which they assess the climate of opinion as well as their willingness to express opinions about controversial political issues on social networking sites. According to this theory, fear of isolation is a highly motivating factor that leads people

to assess the climate of opinion that surrounds them (Noelle-Neumann, 1993). When people perceive that they are in the minority on an issue, they remain silent rather than speak out.

Previous studies have examined the extent to which the general mass media and face-to-face communication channels were used to assess the climate of opinion. SNS introduce a new and possibly better method for assessment. Sites such as Facebook offer users a way to directly assess the climate of political opinion of one's friendship network. That network includes close friends such as family members and significant others that one interacts with frequently in daily life, but it also includes something relatively new—the ability to monitor a broader circle of “friends” that includes former classmates, employees, students, and acquaintances, among others. Whether or not SNS users value the possibility of assessing the climate of opinion of this broader circle of friends, as well as one's close friends, needs to be investigated.

The second aspect of spiral of silence theory is willingness to speak out. In the past, people “speak out” politically by writing letters to the editor, attending political events, and communicating with close friends, among many practices. Thus, the new “broader” circle of friends created through SNS raises questions about willingness to speak out. Ho & McLeod (2008) found that students were more willing to use an anonymous chat room to express their views than doing so face-to-face with other students or adults in their county. Whether they would be more likely to do so with known friends or their “broader” circle of friends via SNS

needs to be tested.

The findings may be beneficial not only to political communication scholars but also to those who design, implement and evaluate political campaigns. Specifically, the findings intend to shed light on online communication channels that can be used to persuade target audience segments, particularly males and females, as well as the role of reference groups in influencing individual decision making regarding controversial political topics.

CHAPTER 2

LITERATURE REVIEW AND THEORETICAL FRAMEWORKS

This study aims to examine how spiral of silence theory might apply with respect to the use of social networking sites (SNS) among young voters for political purposes. This chapter reviews levels of use of SNS by young voters for political purposes, as well as two areas central to spiral of silence theory—the uses of SNS to assess climate of opinion, and uses of SNS to speak out on issues. The chapter concludes by reviewing the literature on the differences between men and women regarding their political information harvest and their use of SNS.

Political uses of social networking sites

Smith (2009) observed that approximately three-fourths of American Internet users (74%) became involved in the 2008 election campaign because they received information and were able to express opinions through Internet channels. The percentage of users was about twice as large in 2008 compared with the 2000 election. Almost one-third of the 2008 Internet users said they shared opinions about the election in particular and the political process in general. They did so by posting comments, watching policy videos, volunteering in election campaigns, and other related activities. In addition, one in ten Internet users (10%) reportedly used the Internet for political reasons via social networking websites where they “discovered their friends’ political interests or affiliations,” “have gotten any candidate or

campaign information on the sites,” “have signed up as a friend of a candidate,” and “started or joined a political group” (Smith & Rainie, 2008, p. 11). Most importantly, the findings indicated that 29% of social network site users observed their friends’ affiliation toward a political issue and said they expressed opinions about certain candidates or parties. That number increased throughout the campaign. According to Lenhart (2009), in the 2008 election, 41% of those who used social networking sites discovered which candidate their friends voted for on these sites; 33% posted political content for their friends to see; and 26% revealed on these sites which presidential candidate they voted for.

Smith (2009) also found that online political information and election-related news consumption have been rapidly rising since the past decade. In particular, within each age group, the young adult group, those composed of citizens aged 18 to 24, has the highest penetration of profiles on social networking sites (83%) and used them for political purposes (74%) during the 2008 election. It is noteworthy that the majority of online political news consumers are relatively highly educated, have college degrees, and enjoy a high-income status compared to the overall population.

Because of the functions provided by social networking sites, there are a variety of choices for political engagement available for users. These include watching news videos, forwarding political information, participating in partisan groups, initiating campaign organizations, showing political tendencies, and discussing policy issues. Smith (2009)

pointed out that active young adult users dominated political participation online. To be specific, 65% of young adults said they used social networking sites to seek information about candidates and campaigns, or to reveal their voting tendencies.

During the 2008 election, SNS were not only regarded as sources of political information but also as channels through which people can voice their opinions. Smith's (2009) findings suggest that 46% of the entire population of online users posted political information on their SNS profiles. The respondents also say they appreciated opportunities for communicating and sharing, a main benefit of SNS (Dwyer, Hiltz, & Widmeyer, 2008). In short, young adults constitute the most fast-growing group of SNS users for political purposes so that their online political behaviors and opinions are likely to have a more discernible impact on election outcomes.

The spiral of silence theory and the climate of opinion

The spiral of silence theory, proposed by Noelle-Neumann in 1993, explains that people want to assess the climate of opinion because they fear being isolated, which is "the risk of losing the goodwill of one's fellow human beings; [the fear] of becoming rejected, despised, and alone" (Noelle-Neumann 1993, p. 41). Noelle-Neumann (1990) further states that "this fear induces them constantly to check accepted opinions and modes of behavior and the potential direction of change" (p. 259). Thus, people use the climate of opinion as a barometer with which to gauge their willingness to speak out about a controversial topic.

Individuals' inherent ability to assess the climate of opinion so as not to be alienated from groups occurs spontaneously.

The phrase "climate of opinion" implies the aggregation of dynamic and ever-changing public views about a topic. Noelle-Neumann (1993) states that the fundamental references for individuals to perceive and predict the climate of opinion (i.e., their ability to judge what is the majority opinion and what is the minority opinion) are based on the accumulation of observations and communication. Noelle-Neumann suggests that "individuals are supposed to be capable of discovering what they have in common and anticipating the tendency that dominates among them" (Csikszentmihalyi, 1990, p. 301).

McQuail (2005) points out that the mass media are currently the most readily accessible sources for assessing the climate of opinion. However, studies have shown that different sources might be seen as important depending upon the exact climate of opinion being assessed.

Noelle-Neumann (1993) claims that when it comes to controversial topics, individuals tend to ascertain the opinion of the majority first. If the perceived majority opinion is similar to their own, they are more empowered to advocate their own original opinion. If the perceived majority opinion differs from their view, they are likely to abrogate the original opinion in favor of the majority point of view or remain silent to avoid contradictions and/or opposition. Those who find themselves in the majority group are more likely to express their

opinion publicly. In other words, they will tend to speak out more.

Studies examining the perceived climate of opinion often measure the respondents' estimations of the current majority opinion along with predictions of potential trends of opinion about certain topics. According to Moy et al. (2001), by comparing the congruency between the current climate of opinion and the future climate of opinion, individuals make a judgment about whether they are in the majority opinion group. That is, if they perceive that the opinion they hold is congruent with their prediction of the current climate of opinion as well as the trend of the climate of opinion in the future, this opinion will be considered the majority one. In addition to congruency of perceived opinions, Moy et al. (2001) showed that assessments of the climate of opinion of those within one's close social circle of friends were more important than perceptions of the climate of opinion of residents within the same city, or residents in the same state. However, media use can play an important role in influencing people's perception of the climate of opinion (Gonzenbach et al., 1999; Shanahan et al., 2004). Studies of traditional mass media uses, including print news reading and television viewing, have demonstrated that media use contributes positively to an individual's knowledge about controversial issues and perceptions of the climate of opinion, which help to predict the majority opinion (Guo & Moy, 1998; Ho & McLeod, 2008; Neuwirth, 2000).

Uses of new media to assess the climate of opinion are of great interest to the current study. Liu and Fahmy's (2009) research investigated people's assessment of the climate of

opinion through traditional media and the Internet, and found that people regarded the Internet as more efficient for this purpose than traditional media. However, few studies have examined whether the multiple functions afforded by social networking sites allow greater personal access to the climate of opinion, at least among the user's circle of friends.

Those who are sensitive to maintaining relationships might be more likely to pay attention to the perceived climate of opinion of their immediate circle of social relations regardless of the majority opinion held by the public in general. Indeed, Neuwirth and Frederick (2004) found that assessing the opinion of peers was a crucial predictor of one's attitude toward acts restricting drinking behaviors, which displayed a more direct influence on one's decision making for a controversial issue than social influences overall. Similarly, Salmon and Kline (1983) indicated that people's opinion formation could be determined and strengthened by support from interpersonal relationships rather than the majority point of view from the impersonal public. Based on these findings, it seems likely that individuals would value Facebook and other SNS more to figure out the climate of opinions among their "friends" and seek supportive opinion from them. After all, such sites offer an easy way to quickly assess what views others are expressing about the issues of the day.

Another aspect still to be investigated is the difference in importance between one's closest friends and the broader circle of "friends" normally associated with Facebook.

A number of follow-up studies have been done to test the spiral of silence effect

involving political and non-political controversial issues. For example, Neuwirth (2000) observed the fluctuation of public opinion about the changing incumbency of two Mexican presidents in 1982. Neuwirth et al. (2007) studied people's fear of isolation and opinion expression about the U.S. invasion of Iraq. Moy et al. (2001) investigated spiral of silence tendencies regarding an affirmative action policy, Initiative 200, a proposal designed to remove race, ethnicity, and gender considerations in hiring and public education. Shanahan et al. (2004) examined how personal responses change because of the effect of public opinion on the regulation of smoking. The results of these studies support the spiral of silence effect. The findings also suggest that two variables are critical in this regard—the perceived climate of opinion and a person's willingness to speak out.

Two research questions need further investigation:

RQ1: Do active users place higher value for assessing the climate of opinion about controversial political issues on Facebook compared with traditional media and interpersonal discussions?

RQ2: How important is it for individuals to assess the climate of opinion: (1) for one's close friends; (2) for one's broader circle of friends; (3) for one's community or state?

Willingness to speak out

The second dimension of spiral of silence theory that is pertinent to the current study is

personal willingness to advocate an opinion publicly. Noelle-Neumann (1993) surmises that people whose opinion is at the advantaged position (such as those in the majority group) are more likely to speak out than people who are in the minority group. She also observes that the voice of the political party that is confident it will win the election is louder than the voice of the opposition party that stands a greater chance of losing. Voters who do not have strong positions or preferences are more likely to be influenced by the candidate who strongly speaks out in campaigns, so that neutral or undecided voters are more prone to vote for the outspoken candidate thinking that doing so makes them part of the mainstream. A number of studies support Noelle-Neumann's (1993) contention that predicting the climate of opinion as well as fear of isolation are the main determinants of speaking out or remaining silent (Hayes, 2007; Ho & McLeod, 2008; Neuwirth et al., 2007; Spencer & Croucher, 2008).

Noelle-Neumann (1990, 1993) points out in her book and later research that spiral of silence theory is limited to controversial topics with a moral component. Same-sex marriage, abortion, nuclear power plants, smoking, affirmative action, and election politics are issues containing moral arguments that have been used in previous studies. For a morally laden issue in a public environment, the threat of isolation is present when individuals do not behave properly. The influence of climate of opinion on willingness to speak out has been especially powerful for issues learned mainly from the mass media. Further, the dimension willingness to speak out has often been measured in terms of an anonymous public rather

than with respect to people with whom one has a relationship.

Previous studies have shown a correlation between perceived climate of opinion and individuals' willingness to speak out (Noelle-Neumann, 1977). Glynn et al. (1997) and Shanahan et al. (2007) found a statistically significant and positive relationship between personal perception of being in the majority and willingness to speak out in a meta-analysis they conducted. The findings suggest that those with strong and vocal opinions will become the advantaged group even though they express the minority view. Because these outspoken people wish to influence and attract others from the opposite side, the inactive group may lose its position of advantage despite a large number of followers at the beginning.

Moreover, Moy et al. (2001) indicate that people are prone to abide by the opinion of those who are closely related to them, often referred to as the "micro-climate" of opinion from immediate circle of relationships (p. 18). Members of this inner circle, along with general social trends, can both have an influence on personal willingness to speak out.

Studies evaluating people's perceived climate of opinion within their close circle of social relations as well as the majority in general have found that people would not only be concerned about the majority opinion in general but also the responses from their reference groups such as friends and family (Neuwirth & Frederick, 2004; Neuwirth et al., 2007).

While facing a controversial issue, people might express their opinions to others differently depending on the interpersonal relationships they have. For example, people who are

sensitive to maintaining relationships would be less likely to express an opinion that contradicts that of their close circle of friends, or might tailor different messages for different social groups.

Lenart (1994) found that the effect of a perceived negative climate of opinion was more important in restricting speaking out only for national issues learned through the mass media. At the local level, the perceived climate of opinion gleaned through interpersonal communication with family or people outside the family only partially followed the spiraling effect. Those in the perceived majority became more likely to speak out, but those in the perceived minority did not remain silent as the theory predicts. Lenart (1994) argues that communication with people other than family is a predictor of the spiral of silence effect rather than communication with family. This implies that although individuals tend to assess the climate of opinion within the local circles of their social network, they are not afraid of sharing their opinions if they think they are in the minority group within their close circle of social relations. Regardless of these circles of social relations, people who perceive they are in the majority will have their opinion reinforced and are more likely to speak out.

Moy et al. (2001) state that the close circle of reference group members including family and friends, rather than the broader circle of reference groups such as residents living in the same city or the same state, is a more relevant variable predicting personal willingness to speak out. Moreover, McCroskey and Richmond's (1987) findings indicate that people are

more willing to have a conversation with friends rather than casual acquaintances or strangers.

Of central interest to this study is the relationship between communication channel and willingness to speak out. Ho and McLeod (2008) surmise that fear of isolation is reduced in computer-mediated discussions. They conducted an experiment by using an online survey to measure respondents' willingness to speak out about the legalization of same-sex marriage under a hypothetical situation (either in person or in an online chat room). They found that people were more willing to speak out to strangers from their own university in a computer-mediated environment rather than in face-to-face situations. Liu and Fahmy's (2009) study also adopted the issue of same-sex marriage to test the spiral of silence theory in both online and offline settings, and found that online communication could attenuate people's fear of isolation although the sense of being isolated online could still affect people's willingness to speak out as spiral of silence theory predicts. Facebook and other social networking sites are expected to have a similar effect in moderating an individual's fear of isolation, but the nature of the interpersonal relationship should also be taken into consideration.

Most of the studies that investigated spiral of silence were conducted during a period in which the traditional media dominated; that is, prior to the development of social networking sites. Facebook and other SNS offer new channels for speaking out. In addition to a general

audience or an audience of close friends, Facebook offers a broader circle of “friends.” How will users respond to the opportunity to express views about controversial issues through these sites?

Considering the foregoing literature, the following hypotheses and research questions are offered:

H1: Individuals will be more likely to speak out via Facebook than via other channels either among their close friends or their broader circle of friends about the issue of same-sex marriage.

H2: Individuals who perceive they are in the minority regarding the issue of same-sex marriage either among their close friends or their broader circle of friends will be more likely to speak out to close friends on Facebook than to their broader Facebook circle of friends.

Gender differences

In discussions about politics, it is often said that men are more active participants than women (Verba, et al., 1997). Women tend to be more sensitive about personal relationships, including their ties with friends and family members, and are said to be more concerned about others’ opinion (Cross & Madson, 1997). As such, many contend that men and women would differ in their use of social networking sites for political topics and purposes compared to the way they use the traditional media.

According to Noelle-Neumann (1993),

In a public situation, men are more disposed to join in talk about controversial topics than are women, younger people than older ones, and those belonging to higher social strata than those from lower strata. If a faction wins many young people or many well-educated people to its side, it automatically has a better chance of appearing to be the faction destined to gain general acceptance (p. 24).

This proposition suggests that an individual's personality, social identification, cultural background, education level, economic status, and gender might amplify or attenuate spiral of silence effects. Previous research has found evidence for individuals' distinct willingness to speak out about controversial issues depending on these demographic variables (Jeffres et al., 1999; Moy et al., 2001; Scheufele & Moy, 2000). The current study focuses on gender effects on the use of Facebook and social networking sites, with controls for other variables.

As far as gender is concerned, Eagly (1987) marshaled several studies about gender differences in behaviors within a discussion group and concluded that "men tend to give and ask for opinions and suggestions and women tend to act friendly and agree with other group members" (p. 109). This finding indicates the inherent socio-psychological difference between men and women on opinion expression—that women are more timid in voicing their opinion because they place more emphasis on maintaining interpersonal relationships and the harmony of their social circle. Further, Eagly (1987) pointed out that behavioral disparities

between genders in a small discussion group are positively associated with the gender segment that had relatively more interests and knowledge of the issue.

Adding more evidence to the notion that there are gender differences in terms of outspokenness over issues, Bergen (1993) compared individuals sampled from a community in Wichita as well as individuals who wrote letters to local newspaper editors about the Operation Rescue campaign. The researcher found that being young, educated, and “being a woman had greater influences on outspokenness about abortion” (p. 14). In addition, women’s willingness to speak out increased with “issue-specific contingencies” that referred to having experience with abortion as well as acquaintances with people who had abortion.

Though the common conjecture that men are more attuned to politics than women still exists, studies have added another nuance to influence the spiral of silence proposition that issue involvement and relevance correlates with personal willingness to speak out. This time, higher personal involvement and relevance of an issue may promote greater willingness to speak out regardless of the perceived climate of opinion (Salmon & Neuwirth, 1987; Spencer & Crouchem, 2008). Thus, women are more likely to express their opinion when they feel the issue is relevant to them. Bergen’s (1993) findings indicated that knowledge about the issue of abortion was positively related to individuals’ willingness to speak out.

Also, Slater (2007) indicated that active selection of media uses might result in different levels of issue engagement and outspokenness so that the resulting behaviors might differ

from those proposed by the spiral of silence theory. Previous studies showed differences between men and women in terms of how they use the mass media for political purposes. Smith and Rainie (2008) found that 50% of their male respondents sought political news through the online media compared to 43% of the women who did so. Harp and Tremayne (2006) found that women were not interested in blogging about politics as much as men, who were also found to consistently judge political blogs as more credible. Based on these results, men and women exhibit different information-seeking and opinion expressing behaviors when it comes to political issues. Nevertheless, Lenhart (2009) found an almost equal number of male and female SNS profiles (35%) and a high percentage (75%) of young adult profiles.

Eagly (1987) suggested that research about gender differences in social behavior focused only on communication among people who were not initially acquainted, so the findings could not offer valid empirical evidence of any distinct interaction between genders.

In summary, women are said to be more likely to speak out about issues with high relevance to them and in which they are highly involved. As a result, personal identity with social segments or subgroups (based on gender, for example) may produce results that may contradict the theoretical predictions on the choice of communication channel dealing with one's interpersonal relationship. Still, few studies have been done to determine differences between male and female users of social networking sites in terms of their propensity to assess climates of opinion and the tendency to speak out about controversial topics. Thus, the

current study asks:

RQ4: Do men and women differ in their general and political uses of Facebook?

RQ5: Do men and women differ in how they use and value Facebook to assess the climate of opinion and to speak out about the issue of same-sex marriage with their (1) close friends and their (2) broader circle of friends?

RQ6: Do men and women who perceive they are in the minority regarding the issue of same-sex marriage differ in their use of Facebook to speak out to their (1) close friends and (2) broader circle of friends?

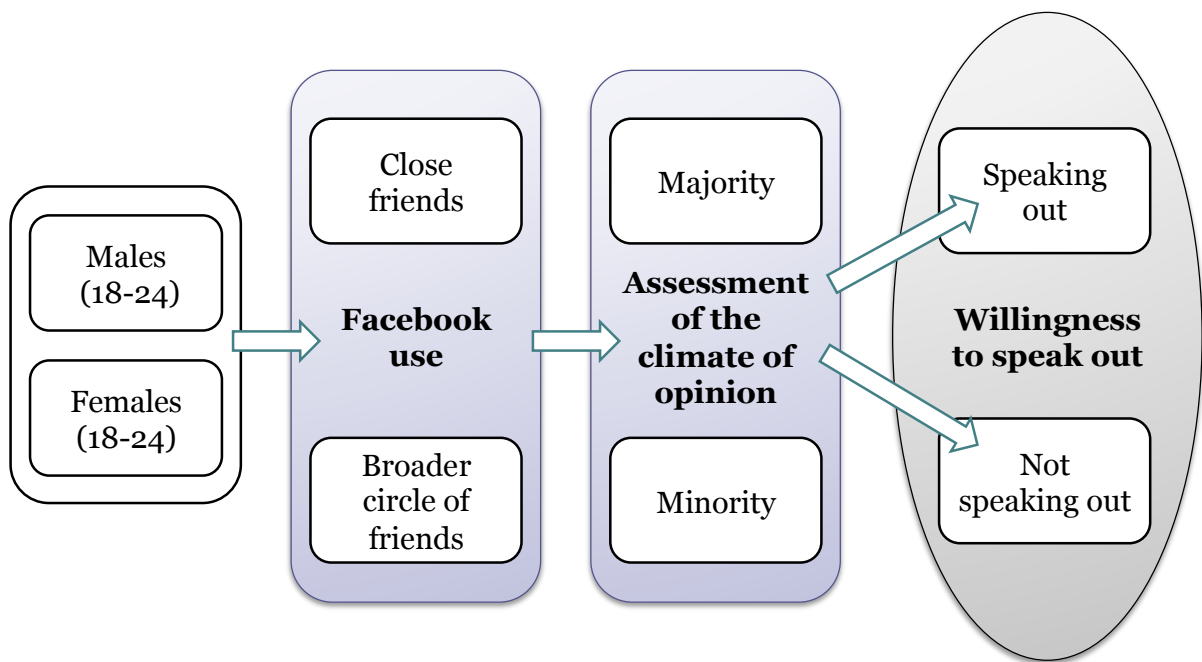


Figure 1 Model of the Spiral of Silence Theory in the Current Study

CHAPTER 3

METHODOLOGY

This study investigates the extent to which social networking sites such as Facebook are used by young adults, age 18 to 24, for political purposes. To gather data, a survey of all undergraduate students at a Midwestern university was conducted. The survey was designed to measure the characteristics of young adult users of Facebook, including their gender, access to Facebook, ways of using Facebook, the relevance of a controversial political issue (same-sex marriage) to them, assessment of political opinions about same-sex marriage and how they express their own opinion about this topic among different circles of friends.

Based on the predictions of the spiral of silence theory, two major dimensions were measured in the survey: (1) the actual use and perceived importance of assessing the climate of opinion through various channels regarding the same sex marriage issue; (2) their willingness to speak out about this issue via traditional channels, interpersonal communication and Facebook in particular.

Sampling and data collection

The population of this study was composed of students who are 18 to 24 years of age. A complete list of e-mail addresses of all the undergraduates were acquired from the registration office at Iowa State University. The students were invited to participate in an online survey that administered via e-mail. At the beginning, a mass e-mail was sent out to all the e-mail

addresses on the list with the introduction of the project to the sample, including the study's purpose and guarantees of confidentiality. A link to the online questionnaire and the informed consent document were given to them in the e-mail message, too. To achieve an acceptable response rate, the students were told that they could leave their e-mail address at the end of the survey if they would like to be in a random drawing for three \$20 gift cards.

The online questionnaire was lodged on the website of an online survey system and was made available to the sample for two weeks following the first e-mail message. The second e-mail message was sent in increments of three days to thank those who had responded and reminded those who had not to complete the questionnaire. At last, a third reminder was sent to the sample a week after the launch of the survey to thank the respondents as well as remind people who had not participated the survey. The content of the mass e-mail and the procedure for gathering data followed recommendation in the book, *Internet, mail, and mixed-mode surveys: the tailored design method* (Dillman, 2000; Dillman et al., 2009).

Questionnaire design

The questionnaire was divided into three parts. The first part aimed to determine how the student-respondents use Facebook for general or political purposes and their demographic background. The second part was composed of items intended to measure how important it is for them to be able to assess the climate of opinion about political issues through different channels and among different social groups including close friends, one's broader circle of

Facebook friends, and people in the community or state. In the third part, the two steps involved in the creation of a spiral of silence were measured using the issue of same-sex marriage. The questionnaire was pretested in a large undergraduate lecture course.

Variables

Independent variables. In the study, gender is the primary independent variable. Their concern for the issue of same-sex marriage was measured. The respondents were asked how important the same-sex marriage issue is to them (How would you rank your concern for the same-sex marriage issue?), their knowledge about the issue (How much do you know about the same-sex marriage issue?), the frequency they see coverage on mass media (How often do you see coverage of the same-sex marriage issue in the mass media?), and the frequency of hearing friends talk about the issue (How often do you hear your friends talk about the issue of same-sex marriage?). The respondents were also asked to provide their demographic information such as age, citizenship, voter registration, voting experience, the frequency of Facebook uses.

Dependent variables. The respondents were asked the frequency with which they use Facebook for general and political purposes. The spiral of silence effect was measured in two steps—(1) the assessment of the climate of opinion and (2) willingness to speak out to close friends, one's broader circle of Facebook friends, and community/state groups.

To measure the first step, respondents were asked the extent to which they perceive the

traditional media, interpersonal discussions, and Facebook are useful in assessing the climate of opinion about controversial political issues in general on a 1 to 5 scale where 1 means “not useful at all” and 5 means “extremely useful.” Next, they were asked how important it is for them to be able to assess the climate of opinion among close friends, one’s broader circle of Facebook friends, and people in their community or state about controversial political issues (e.g., How important is it to you to find out what your [close friends] are thinking about controversial political issues?) on a 1 to 5 scale where 1 means “not important at all” and 5 means “extremely important.”

To determine channel preference for assessing the climate of opinion among close friends regarding the same-sex marriage topic, respondents were asked to indicate their use of the following channels: (1) Facebook, (2) Interpersonal discussions such as face-to-face conversations, telephone calls, text messaging, e-mails, and blogs, (3) Traditional channels such as observing them writing letters to editors of newspapers or TV programs, calling in to radio programs, wearing campaign buttons, putting bumper stickers on the car, joining campaigns for the issue, and so forth. The response options range from 1 to 5 where 1 means “never” and 5 means “very frequently.” The same items were used to measure the use of each of the three channels in assessing the climate of opinion one’s broader circle of Facebook friends hold about the same-sex marriage issue. For both close friends and one’s broader circle of friends, respondents were asked questions about their perceived usefulness for

assessing climate of opinion on each of the three channels (i.e. Please rate the extent to which each of the following channels is useful to you in finding out what the majority opinion is about controversial political issues) using a 1 to 5 scale where 1 indicates “not useful at all” and 5 indicates “extremely useful.”

To determine the spiral of silence second step, respondents were asked, “How important is it to you to express your opinion about the issue of same-sex marriage to your close friends/broader circle of friends?” The response options range from 1 to 5 where 1 means “not important at all” and 5 means “extremely important.” To determine their opinion expression on Facebook, interpersonal communication channels, and traditional channels, respondents were asked to indicate their use of each of the following channels—(1) Facebook, (2) Interpersonal discussions such as face-to-face conversations, telephone calls, text messaging, e-mails, and blogs, (3) Traditional channels such as writing letters to editors of newspapers or TV programs, calling in to radio programs, wearing campaign buttons, putting bumper stickers on the car, joining campaigns for the issue, and so forth—to express their opinions about the issue of same-sex marriage among close friends/one’s broader circle of Facebook friends. Here, the response options also range from 1 to 5 where 1 means “never” and 5 means “very frequently.” To measure the perceived usefulness of channels to express personal opinion the respondents were asked: “Please rate the extent to which each of the following is useful to you in expressing your political opinion to your close friends about the

issue of same-sex marriage,” on (1) Facebook, (2) interpersonal communication channels, and (3) traditional channels, with a 1 to 5 scale where 1 indicates “not useful at all” and 5 indicates “extremely useful.”

To determine willingness to speak out and potential behaviors of speaking out about the issue of same-sex marriage, respondents were given two hypothetical scenarios. In the first scenario, respondents were asked to assume that they have found out that most of their close friends/broader circle of friends hold a political view about same-sex marriage that is similar to their own. Then, they were asked to choose what they would do on Facebook. The options included (1) avoiding using Facebook to express my opinion about the issue, (2) indicating to them that you agree with them only if they ask you for your opinion, (3) sharing links with them that reflect their view of the issue, (4) telling them that you agree with them. Responses (1) and (2) were combined as the item of not speaking out; (2) and (3) were combined as the item of speaking out.

The second scenario assumed that respondents know most of their close friends/broader circle of friends hold a political view about same-sex marriage that is the opposite to their own. Again, they were asked to choose what they would do on Facebook. The options included (1) avoiding using Facebook to express my opinion about the issue, (2) indicating to them that you disagree with them only if they ask you for your opinion, (3) sharing links with them that reflect their view of the issue, (4) sharing links with them that show an opposite

view of the issue, and (5) telling them that you disagree with them; (1) and (2) were combined as the item of not speaking out whereas (3), (4), and (5) were combined as the item of speaking out.

Data analysis

An independent samples t-test and a multivariate analysis of variance test were conducted to examine whether respondents' demographic differences such as age, gender, citizenship, voter registration, voting experience, activity of using Facebook, and issue relevance have any influence on the two spiral of silence stages with their selection and perceived importance on Facebook and other communication channels. Analysis of variance tests were applied to examine whether there are significant differences between these independent variables, especially gender, leading to the outcome variables, willingness to speak out among the group of (1) close friends and (2) broader circle of friends on Facebook. Finally, chi-square tests were conducted to determine whether the assessment of the climate of opinion has a bearing on willingness to speak out on Facebook.

CHAPTER 4

RESULTS

Demographics

The mass e-mail was sent out to a total of 20,608 undergraduates and there were 2,593 responses stored in the online survey server. The response rate of the survey was around 12.6%. After deleting the incomplete responses and the ones from the respondents whose age was over 24, 1,844 responses were valid and used for further analysis. Among all the young adult respondents, aged 18 to 24, the average age was 20 and respondents from the age group 19 to 21 comprised the majority of the respondents (69.3%). There were more female respondents (62.7%) than male respondents (37.3%) despite the fact that the percent ages of registered male and female undergraduates at Iowa State University are 56.3% and 43.7% (Iowa State University, 2010). This shows that females in this age group may have high interest in topics relevant to Facebook and would like to report their use on Facebook. In addition, most of them were U.S. citizens (96.4%), which is similar to the percent of registered undergraduates at Iowa State University (92.3%). Regardless of citizenship, 82.6% of the respondents were registered voters and over half (57.4%) of them have voted in at least one election in the past two years (Table 1 and Table 2).

Table 1 Frequency distribution of respondents' age

Age	N	Percent
18	192	10.4
19	463	25.1
20	424	23.0
21	391	21.2
22	245	13.3
23	99	5.4
24	30	1.6
Total	1844	100.0

Table 2 Demographic Frequency

Category	Item	N	Percent
Gender	Female	1157	62.7
	Male	687	37.3
U.S. Citizen	Yes	1778	96.4
	No	66	3.6
Registered voter	Yes	1524	82.6
	No	320	17.4
Have voted in the past two years	Yes	1058	57.4
	No	786	42.6
Total		1844	100.0

A high percentage, 96.1%, of respondents have Facebook profiles. Also, 81.8% are active users including the group of respondents who checked their profile “several times a day” (58.8%) and “about once a day” (23.0%), compared to 19.2% of non-active users, which included three groups of respondents who checked their profile “every few days” (8.4%), “once a week” (3.6%), or “do not check at all” (6.2%) in the past week (Table 3).

Table 3 Facebook Profile

	Item	N	Percent
Currently have a profile on Facebook	Yes	1772	96.1
	No	72	3.9
The frequency of checking profiles in the past week	Several times a day	1085	58.8
	About once a day	424	23.0
	Every few days	155	8.4
	Once a week	66	3.6
	Do not check at all	114	6.2
Total		1844	100.0

The respondents were asked to indicate their frequency of general use as well as political use of Facebook by a 1 (never) to 5 (very frequently) Likert scale (Table 4). For the general uses, they used Facebook most frequently to “stay in touch with friends” ($m=4.29$, $sd=0.862$) followed by “make plans with friends” ($m=3.52$, $sd=1.085$). They seldom used Facebook to “make new friends” ($m=2.13$, $sd=1.044$), “make academic or professional contacts” ($m=2.01$, $sd=0.988$), or “discuss an event, issue or cause with other people” ($m=2.83$, $sd=1.156$).

Compared to general use, the respondents showed relatively low use of Facebook for political communication such as “reading political news” ($m=1.77$, $sd=0.988$), “watching videos relevant to politics” ($m=1.73$, $sd=0.935$), “signing up as a friend of politicians” ($m=1.44$, $sd=0.818$), “joining a discussion group about a policy or political issue” ($m=1.43$, $sd=0.815$), “organizing political and/or issue campaigns” ($m=1.26$, $sd=0.659$), “forwarding news items, video or audio materials about a political issue to friends” ($m=1.82$, $sd=1.082$), “posting comments about a political issue” ($m=1.87$, $sd=1.060$), or “joining a political group or supporting a political cause” ($m=1.71$, $sd=0.987$). In addition, two questions were asked for

willingness to speak out regarding controversial political issues in general. Results showed that the respondents seldom used Facebook to “communicate with those who hold opinions similar to yours about a political issue” ($m=1.86$, $sd=1.070$) and “argue with or persuade those who hold opinions opposite to yours about a political issue” ($m=1.62$, $sd=0.961$). A comparison of means for general use and political use shown in table 4 indicates that discussions about politics are not as popular as maintenance of friendship on Facebook. A paired-samples t test showed that there is a significant difference between respondents’ Facebook use for general purposes and political purposes ($t(1687)=66.695$, $p<0.001$).

Table 4 Facebook Use

General Use	N	Mean	S.D.
Staying in touch with friends	1769	4.29	0.862
Making plans with friends	1770	3.52	1.085
Discussing an event, issue or cause with other people	1771	2.83	1.156
Making new friends	1771	2.13	1.044
Making academic or professional contacts	1772	2.01	0.988
Average score (Cronbach's alpha=0.658)	1765	2.96	0.670
Political Use			
Reading political news	1768	1.77	0.988
Watching videos relevant to politics	1768	1.73	0.935
Signing up as a friend of politicians	1768	1.44	0.818
Joining a discussion group about a policy or political issue	1761	1.43	0.815
Organizing political and/or issue campaigns	1763	1.26	0.659
Forwarding news items, video or audio materials about a political issue to friends	1763	1.82	1.082
Posting comments about a political issue	1755	1.87	1.060
Joining a political group or support a political cause	1755	1.71	0.987
Communicating with those who hold opinions similar to yours about a political issue	1761	1.86	1.070
Arguing with or persuading those who hold opinions opposite to yours about a political issue	1771	1.62	0.961
Average score (Cronbach's alpha=0.924)	1694	1.65	1.400
t=66.695, df=1687, p<0.001			

In addition, results showed significant differences in the respondents' demographic variables influencing their political use of Facebook to "argue with or persuade those who

hold opinions opposite to yours about a political issue.” To be specific, these people were males, registered voters, and active Facebook users as well as they voted in any election in the past two years (Table 5).

Table 5 People who Like to Argue with or Persuade Others with Opposite Opinions about Political Issues

Demographic	Item	N	Mean	S.D.
Gender	Male	631	1.76	1.030
	Female	1140	1.54	0.912
t=4.641, df=1769, p<0.001				
Registered voter	Yes	1462	1.65	0.974
	No	309	1.50	0.889
t=2.498, df=1769, p=0.013				
Voted in the past to year	Yes	1016	1.72	1.023
	No	755	1.49	0.853
t=5.075, df=1769, p<0.001				
Facebook use	Active	1508	1.65	0.976
	Non-active	263	1.45	0.854
t=-3.113, df=1769, p=0.002				

As far as the issue of same-sex marriage is concerned (Table 6), respondents showed some concern ($m=3.09$, $sd=1.400$) about the issue and they knew a fair amount about the issue ($m=3.64$, $sd=0.941$). They sometimes saw coverage of the issue in mass media ($m=3.29$, $sd=0.976$) and sometimes heard friends talk about the issue ($m=2.83$, $sd=1.080$).

Table 6 Relevance to the Issue of Same-sex Marriage

	N	Mean	S.D.
Concern for the issue (1= No concern at all; 5= Very high concern)	1767	3.09	1.400
Knowledge about the issue (1= No idea at all; 5= know a lot about the issue)	1767	3.64	0.941
Frequency of seeing coverage of the issue in mass media (1= Never; 5= Very Frequently)	1769	3.29	0.976
Frequency of hearing friends talk about the issue (1= Never; 5= Very Frequently)	1769	2.83	1.080

Answering the research questions and testing the hypotheses

RQ1: Do active users place higher value for assessing the climate of opinion about controversial political issues on Facebook compared with traditional media and interpersonal discussions?

The first research question compared active users (respondents who checked their Facebook profile “several times a day” and “about once a day”) with non-active users (which included respondents who checked their profile “every few days,” “once a week,” and “do not check at all”) for perceived usefulness for assessing the climate of opinion about controversial political issues in general on Facebook, with traditional media, and interpersonal discussions. Results (Table 7) showed the active users regarded traditional media ($m=3.85$, $sd=0.989$) as the most useful followed by interpersonal discussions ($m=3.25$, $sd=1.174$). Surprisingly, they placed the lowest value for usefulness of assessing the climate of opinion via Facebook ($m=2.48$, $sd=1.162$) about a controversial political issue. Similarly, the non-active users also regarded traditional media ($m=3.75$, $sd=1.073$) as more important

than interpersonal discussions ($m=3.17$, $sd=1.193$) and Facebook ($m=1.96$, $sd=1.011$). A one-way MANOVA was calculated examining the effect of activity of Facebook use (active, non-active) on their perceived usefulness of each of the three channels. A significant effect was found ($\Lambda(3,1763)=17.23$, $p<0.001$). By comparing active users and non-active users, results showed that these two groups significantly differ in their perceived usefulness of Facebook ($F(1,1765)=46.38$, $p<0.001$) to assess the climate of opinion about a controversial issue, but did not significantly differ for either traditional media ($F(1,1765)=2.08$, $p=0.150$) or interpersonal discussions ($F(1,1765)=1.14$, $p=0.287$) to assess the climate of opinion. This might indicate that those who use a source get more benefit and those non-active users in general use all sources less. Social networking sites such as Facebook are an emerging channel for individuals' as a source of information and they also use this communication channel to observe the fluctuating climate of opinion about controversial issues. However, the surprise is that higher users rated it lower than traditional media and interpersonal sources. Because there might be less political content posted on Facebook, active users still rely on traditional media and interpersonal sources to assess the climate of opinion about controversial issues in general. Although the perceived usefulness of Facebook for the purpose has not yet exceeded the traditional media and interpersonal communication, the significant difference between active users and non-active users suggests that the perceived usefulness has a positive relationship with the engagement level of the

cutting-edge technology.

Table 7 Users and Perceived Usefulness of Channels

Communication channel	User type	N	Mean	S.D.
Traditional media	Active	1507	3.85	0.989
	Non-active	263	3.75	1.073
	Total	1770	3.83	1.002
Interpersonal communication	Active	1508	3.25	1.174
	Non-active	263	3.17	1.193
	Total	1771	3.24	1.177
Facebook	Active	1508	2.48	1.162
	Non-active	262	1.96	1.011
	Total	1770	2.40	1.156
Communication channel	Group df	Error df	F	Sig.
Traditional media	1	1765	1.076	0.150
Interpersonal communication	1	1765	1.135	0.287
Facebook	1	1765	46.376	<0.001
<i>Wilks' Lambda=17.23</i>	3	1763	17.230	<0.001

RQ2: How important is it for individuals to assess the climate of opinion: (1) for one's close friends; (2) for one's broader circle of friends; (3) for one's community or state?

The second research question asked the importance for individuals to assess the climate of opinion about a controversial political issue among people with three different levels of social relations: (1) one's close friends, (2) one's broader circle of friends, and (3) one's community or state. Respondents (Table 8) valued the assessment of climate of opinion from close friends such as family members most ($m=2.85$, $sd=1.160$), followed by people in the same community or state ($m=2.62$, $sd=1.132$). The assessment of their broader circle of friends ($m=2.10$, $sd=0.961$) was least important. A one-way repeated measures ANOVA was

calculated comparing the importance of assessing the climate of opinion among three levels of social relations: close friends, broader circle of friends, and people in the same community or state. A significant difference was found ($F(1, 1758)=74.348, p<0.001$). Follow-up protected *t* tests indicated that the importance of assessing the climate of opinion differs accordingly with individuals' social relations.

For the assessment of climate of opinion with regard to the specific issue of same-sex marriage, respondents indicated a higher value for assessing the climate of opinion among close friends ($m=2.60, sd=1.180$) than their broader circle of friends ($m=1.99, sd=0.995$). A paired-samples *t* test was calculated to compare the mean of close friends and the mean of broader circle of friends and a significant difference was found ($t(1750)=27.047, p<0.001$). In sum, regarding political communication, people find assessment of public opinion from their closest circle of friends most valuable, and pay less attention to opinions from their broader circle of friends or people in the same community or state.

Table 8 Social Relations and the Importance of Assessing the Climate of Opinion

General political issues		N	Mean	S.D.	
Close friends		1766	2.85	1.160	
Broader circle of friends		1767	2.10	0.961	
People in the same community or state		1769	2.62	1.132	
		Group df	Error df	F	Sig.
Comparison among three levels of social relations		1	1758	74.348	<i>p</i> <0.001
Paired group		N	Mean	S.D.	Sig.
Pair 1	Close friends &	1761	2.85	1.159	<i>p</i> <0.001
	Broader circle of friends	1761	2.10	0.962	
t=34.712, df=1760					
Pair 2	Broader circle of friends &	1765	2.10	0.961	<i>p</i> <0.001
	People in the same community or state	1765	2.62	1.131	
t=-21.556, df=1764					
Pair 3	Close friends &	1763	2.85	1.160	<i>p</i> <0.001
	People in the same community or state	1763	2.62	1.132	
t=8.622, df=1762					
The issue of same-sex marriage		N	Mean	S.D.	
Close friends		1765	2.60	1.180	
Broader circle of friends		1758	1.99	0.995	
t=27.047, df=1750, <i>p</i> <0.001					

Further, among close friends, respondents (Table 9) reported that they actually used interpersonal discussions ($m=2.73$, $sd= 1.278$) more frequently than traditional channels ($m=1.98$, $sd=1.077$) and Facebook ($m=1.90$, $sd=1.052$) to assess the climate of opinion about the issue of same-sex marriage. They also perceived interpersonal discussions were more useful ($m=3.00$, $sd=1.317$), but valued Facebook ($m=2.26$, $sd=1.166$) as slightly more useful

than traditional channels ($m=2.05$, $sd=1.061$) for assessing the climate of opinion among close friends about the issue of same-sex marriage. Among the broader circle of friends, similarly, they used interpersonal discussions ($m=2.04$, $sd=1.056$) more frequently than Facebook ($m=1.95$, $sd=1.112$) and traditional channels ($m=1.76$, $sd=0.992$). They perceived (Table 10) interpersonal discussions ($m=2.28$, $sd=1.183$) as more useful than Facebook ($m=2.20$, $sd=1.200$) and traditional channels ($m=1.85$, $sd=1.021$) for assessing the climate of opinion about the issue of same-sex marriage. Paired-samples t-tests (Table 9) were conducted to compare the use of each channel to assess the climate of opinion about the issue between the group of close friends and broader circle of friends. Significant results showed that respondents used traditional media ($t=10.144$, $df=1756$, $p<0.001$) and interpersonal communication ($t=25.422$, $df=1756$, $p<0.001$) more frequently to assess close friends' climate of opinion, but they used Facebook ($t=-2.410$, $df=1762$, $p=0.016$) more frequently to assess the broader circle of friends' opinion. The possible reason might be that Facebook is still at the beginning stage of adoption for political communication, so people still rely on the channels they have been using to have access to close friends' point of view about political issues. In other words, people's choice of channels to assess close friends' climate of opinion depends on the directness of communication they have with their close friends. For instance, interpersonal discussions are the most direct way to find out close friends' opinion followed by traditional channels including their direct observation of close friends' communicative

behaviors such as writing letters to editors of newspapers or TV programs, calling in to radio programs, wearing campaign buttons, putting bumper stickers on the car, joining campaigns for the issue, and so forth. The respondents use a computer-mediated channel such as Facebook less to assess their close friends' climate of opinion. However, it is also noteworthy that Facebook works better than traditional channels to assess the broader circle of friends' opinion. The reason might be that people often reconnect with their broader circle of friends on Facebook and have an easier way to communicate with them via this channel.

**Table 9 Assessment of the Climate of Opinion about the Issue of Same-sex Marriage
- Actual Use**

Communication channel	Friend type	N	Mean	S.D.
Traditional media	Close friend	1765	1.98	1.077
	Broader circle of friend	1764	1.76	0.992
t=10.144, df=1756, p<0.001				
Interpersonal communication	Close friend	1765	2.73	1.278
	Broader circle of friend	1764	2.04	1.056
t=25.422, df=1756, p<0.001				
Facebook	Close friend	1768	1.90	1.052
	Broader circle of friend	1767	1.95	1.112
t=-2.410, df=1762, p=0.016				

**Table 10 Assessment of the Climate of Opinion about the Issue of Same-sex Marriage
- Perceived Usefulness**

Communication channel	Friend type	N	Mean	S.D.
Traditional media	Close friend	1767	2.05	1.061
	Broader circle of friend	1767	1.85	1.021
t=9.835, df=1761, p<0.001				
Interpersonal communication	Close friend	1767	3.00	1.317
	Broader circle of friend	1763	2.28	1.183
t=25.912, df=1757, p<0.001				
Facebook	Close friend	1763	2.26	1.166
	Broader circle of friend	1760	2.20	1.200
t=2.827, df=1750, p=0.005				

H1: Individuals will be more likely to speak out via Facebook than via other channels either among their close friends or their broader circle of friends about the issue of same-sex marriage.

The first hypothesis posited that, “Individuals would be more likely to speak out via Facebook than via other channels either among their close friends or their broader circle of friends about the specific issue, same-sex marriage.” For speaking out about the issue, respondents (Table 11) reported that it was significantly more important to speak out among close friends ($m=2.70$, $sd=1.269$) than among this broader circle of friends ($m=1.89$, $sd=1.036$). They spoke out about the issue of same-sex marriage among their close friends more frequently via interpersonal discussions (Table 12, $m=2.69$, $sd=1.318$) than Facebook ($m=1.82$, $sd=1.110$) and traditional channels ($m=1.57$, $sd=0.915$). Predictably, they perceived interpersonal discussions (Table 13, $m=2.92$, $sd=1.412$) as more useful than Facebook ($m=2.07$, $sd=1.218$) and traditional channels ($m=1.77$, $sd=1.029$) for speaking out about the

issue of same-sex marriage. Among their broader circle of friends (Table 12), they also spoke out about the issue of same-sex marriage more frequently via interpersonal discussions ($m=1.99$, $sd=1.070$) than Facebook ($m=1.65$, $sd=0.984$) and traditional channels ($m=1.48$, $sd=0.844$). Also, they perceived speaking out (Table 13) through interpersonal discussions ($m=2.28$, $sd=1.228$) as more useful than Facebook ($m=1.94$, $sd=1.167$) and traditional channels ($m=1.63$, $sd=0.937$). In addition, paired-samples t tests were conducted to compare the use of each channel to speak out about the issue between the group of close friends and broader circle of friends. Significant results showed that respondents used traditional media ($t=6.293$, $df=1749$, $p<0.001$), interpersonal communication ($t=25.571$, $df=1749$, $p<0.001$) and Facebook ($t=9.475$, $df=1757$, $p<0.001$) more frequently to speak out to their close friends than their broader circle of friends (Table 12).

Table 11 Importance of Speaking out about the Issue of Same-sex Marriage between two circles of friends

The issue of same-sex marriage	N	Mean	S.D.
Close friends	1752	2.70	1.269
Broader circle of friends	1733	1.89	1.036
$t=33.049$, $df=1716$, $p<0.001$			

**Table 12 Willingness of Speaking Out about the Issue of Same-sex Marriage
- Actual Use**

Communication channel	Friend type	N	Mean	S.D.
Traditional media	Close friend	1759	1.57	0.915
	Broader circle of friend	1760	1.48	0.844
t=6.293, df=1749, p<0.001				
Interpersonal communication	Close friend	1760	2.69	1.318
	Broader circle of friend	1760	1.99	1.070
t=25.571, df=1749, p<0.001				
Facebook	Close friend	1765	1.82	1.110
	Broader circle of friend	1763	1.65	0.984
t=9.457, df=1757, p<0.001				

**Table 13 Willingness of Speaking Out about the Issue of Same-sex Marriage
- Perceived Usefulness**

Communication channel	Friend type	N	Mean	S.D.
Traditional media	Close friend	1754	1.77	1.029
	Broader circle of friend	1759	1.63	0.937
t=7.809, df=1743, p<0.001				
Interpersonal communication	Close friend	1754	2.92	1.412
	Broader circle of friend	1752	2.28	1.228
t=23.537, df=1736, p<0.001				
Facebook	Close friend	1749	2.07	1.218
	Broader circle of friend	1751	1.94	1.167
t=6.381, df=1731, p<0.001				

A one-way repeated measure ANOVA was calculated comparing the respondents' use of the three channels to speak out about the issue of same-sex marriage. The result (Table 14) showed a significant difference in use of channels ($F(1, 1748) = 73.333, p < 0.001$). Follow-up protected t tests revealed that individuals were more likely to speak out to both circles of friends and their broader circle of friends via interpersonal communication ($m = 2.70$, $sd = 1.318$) than via Facebook ($m = 1.82$, $sd = 1.106$) followed by traditional channels ($m = 1.57$,

sd=0.907).

In conclusion, the first hypothesis was not supported because individuals would be more likely to speak out via interpersonal discussions than Facebook and traditional channels about the issue of same-sex marriage either among close friends or broader circle of friends. Results indicate that individuals' willingness to express opinion about political issues depends on the social relations they have with their audience. Further, interpersonal communication would be the most direct channel for expressing personal opinions to people with frequent interactivity. The results could be due to the reason that individuals have lower fear of isolation if they speak to their friends instead of to the public in an unfamiliar environment.

Table 14 Use of Channels for Speaking Out about the Issue of Same-sex Marriage

Communication channel		N	Mean	S.D.	
Facebook		1749	1.82	1.106	
Interpersonal discussions		1749	2.70	1.318	
Traditional channels		1749	1.57	0.907	
		Group df	Error df	F	Sig.
Comparison among use of three channels		1	1748	73.333	<i>p</i> <0.001
Paired group		N	Mean	S.D.	Sig.
Pair 1	Facebook &	1756	1.82	1.106	<i>p</i> <0.001
	Interpersonal discussions		2.69	1.318	
t=-28.259, df=1755					
Pair 2	Interpersonal discussions &	1753	2.70	1.318	<i>p</i> <0.001
	Traditional channels		1.57	0.907	
t=36.811, df=1752					
Pair 3	Facebook &	1755	1.82	1.110	<i>p</i> <0.001
	Traditional channels		1.57	0.916	
t=10.234, df=1754					

H2: Individuals who perceive they are in the minority regarding the issue of same-sex marriage either among their close friends or their broader circle of friends will be more likely to speak out to close friends on Facebook than to their broader Facebook circle of friends.

The second hypothesis proposed that, “Individuals who perceive they are in the minority regarding the issue of same-sex marriage either among their close friends or their broader circle of friends will be more likely to speak out to close friends on Facebook than to their broader Facebook circle of friends.” To test this hypothesis, respondents were asked about their willingness to speak out to their close friends/broader circle of friends on Facebook if they perceived being in the majority/minority. When they perceive their view is in the

majority (Table 15), 67.8% of the respondents would not speak out to close friends. These included respondents who would “indicate to them that you agree with them only if they ask you for your opinion” (37.1%) and those who would “avoid using Facebook to express my opinion about the issue” (30.7%). On the contrary, the 32.2% of the respondents who would speak out included the respondents who would “tell them that you agree with them” (19.7%) and those who would “share links with them that reflect their view of the issue” (12.5%).

When they perceive their view is in the minority among their close friends, a larger portion (80.1%) of the respondents would not speak out that included 39.7% of the respondents who would “avoid using Facebook to express my opinion about the issue,” 38.6% of them who would “indicate to them that you disagree with them only if they ask you for your opinion,” and 1.8% of the respondents who would “share links with them that reflect their view of the issue.” Speaking out is a relatively small group of people (19.9%) including 14.3% who would “tell them that you disagree with them” and 5.6% of them who would “share links with them that show an opposite view of the issue.” A chi-square test of independence was calculated comparing the willingness of speaking on Facebook when respondents perceived they were in the majority and in the minority among their close friends. A significant interaction was found ($\chi^2 = 436.759$, $df=1$, $p<0.001$). Individuals were more likely to speak out to close friends when they perceived they were in the majority (32.2%) than in the minority (19.8%).

Table 15 Willingness of Speaking Out on Facebook with Different Climate of Opinions among Close Friends

Majority	Item	N	Percent
Speaking out	Telling them that you agree with them	345	19.7
	Sharing links with them that reflect their view of the issue	219	12.5
Not speaking out	Indicating to them that you agree with them only if they ask you for your opinion	649	37.1
	Avoid using Facebook to express my opinion about the issue	538	30.7
Total		1751	100.0
Minority			
Speaking out	Telling them that you disagree with them	253	14.3
	Sharing links with them that show an opposite view of the issue	98	5.3
Not speaking out	Avoid using Facebook to express my opinion about the issue	700	38.0
	Indicating to them that you disagree with them only if they ask you for your opinion	681	36.9
	Sharing links with them that reflect their view of the issue	32	1.7
Total		1764	100.0
$\chi^2 = 436.759$, $df=1$, $p<0.001$			

For the question about speaking out to one's broader circle of friends (Table 16), when you perceive you are in the majority, 73.0% of the respondents would not speak out about the issue (this includes 37.6% of the respondents who would "indicate to them that you agree with them only if they ask you for your opinion" and 35.4% who would "avoid using Facebook to express my opinion about the issue.") The rest (27.0%) of the respondents would speak out including 14.1% of the respondents who would "tell them that you agree with

them” and 7.6% of them who would “share links with them that reflect their view of the issue” when they assessed being in the majority among their broader circle of friends.

Likewise, when assessing being in the minority, 82.2% of respondents would not speak (including 43.2% of the respondents who would “avoid using Facebook to express my opinion about the issue,” 37.0% who would “indicate to them that you disagree with them only if they ask you for your opinion,” and 2.0% who would “share links with them that reflect their view of the issue.” A total of 17.8% would speak out including 9.5% who would “tell them that you disagree with them,” and 3.9% who would “share links with them that show an opposite view of the issue.” A chi-square test of independence was calculated comparing the willingness of speaking on Facebook when respondents perceived they were in the majority and minority among their broader circle of friends. A significant interaction was found ($\chi^2 = 576.747$, $df=1$, $p<0.001$). Also, among broader circle of friends, individuals were significantly more likely to speak out when assessing being in the majority (22.9%) than assessing being in the minority (13.9%).

**Table 16 Willingness of Speaking Out on Facebook with Different Climate of Opinions
among Broader Circle of Friends**

Majority	Item	N	Percent
Speaking out	Telling them that you agree with them	260	14.1
	Sharing links with them that reflect their view of the issue	140	7.6
Not speaking out	Indicating to them that you agree with them only if they ask you for your opinion	697	37.6
	Avoid using Facebook to express my opinion about the issue	652	35.4
Total		1746	100.0
Minority			
Speaking out	Telling them that you disagree with them	176	10.0
	Sharing links with them that show an opposite view of the issue	72	4.1
Not speaking out	Avoid using Facebook to express my opinion about the issue	797	45.2
	Indicating to them that you disagree with them only if they ask you for your opinion	683	38.7
	Sharing links with them that reflect their view of the issue	37	2.1
Total		1765	100.0
$\chi^2 = 576.747$, $df=1$, $p<0.001$			

Chi-square tests were conducted to examine whether there is a difference in individuals' willingness to speak out about the issue of same-sex marriage between close friends and their broader circle of friends on Facebook when as perceived being in the minority. Results (See Table 17) indicated a significant difference that the respondents were more likely to speak out about the issue to their close friends than to their broader circle of friends ($\chi^2 (1)=21.402$, $p<0.001$). In addition, when they assessed being in the majority, they were also more likely to

speak out about the issue to their close friends than their broader circle of friends and the result is significant ($\chi^2(1)=37.874, p<0.001$). The results support the second hypothesis that individuals would be more likely to speak out to close friends than their broader circle of friends on Facebook when they perceive they are in the minority opinion group. The respondents both scored higher in use of Facebook and its usefulness to speak out about the issue of same-sex marriage when they communicated with their close friends. In this case, even if they found out that most of their close friends might disagree with them, they would not be less afraid to reveal their opinion compared to the same situation among their broader circle of friends.

Table 17 Willingness to Speak Out on Facebook between Close and Broader Circle of Friends

Majority	Speaking out	Not speaking out	Total
Close friends	564 (16.1%)	1187 (33.9%)	1751 (50.1%)
Broader circle of friends	400 (11.4%)	1346 (38.5%)	1746 (49.9%)
Total	964 (27.1%)	2533 (72.9%)	3497 (100.0%)
$\chi^2=37.874, df=1, p<0.001$			
Minority	Speaking out	Not speaking out	Total
Close friends	351 (9.9%)	1413 (40.0%)	1764 (50.0%)
Broader circle of friends	248 (7.0%)	1517 (43.0%)	1765 (50.0%)
Total	599 (17.0%)	2930 (83.0%)	3529 (100.0%)
$\chi^2=21.402, df=1, p<0.001$			

Furthermore, results (see Table 18) showed that 78.4% of all the respondents would neither speak out to close friends nor their broader circle of friends, while 12.3% of them would speak out to both group of friends when perceived being in the minority. Only 7.6% of

the respondents would speak out to close friends but not broader circle of friends where 1.7%

of the respondents would speak out to broader circle of friends but not close friends.

($\chi^2(1)=833.137, p<0.001$).

**Table 18 Willingness to Speak Out to Close Friends and Broader Circle of Friends
When They Perceive They are in the Minority**

			Broader circle of friends		
			Not speak out	Speak out	Total
Close friends	Not speak out	Count	1380	30	1410
		% of Total	78.4%	1.7%	80.1%
	Speak out	Count	133	217	350
		% of Total	7.6%	12.3%	19.9%
Total		Count	1513	247	1760
		% of Total	86.0%	14.0%	100.0%

$\chi^2=833.137, df=1, p<0.001$

RQ4: Do men and women differ in their general and political uses of Facebook?

Research question 4 (see Table 19) examined whether there are gender differences in general and political uses of Facebook. For general uses, females showed significantly more frequent use of Facebook than males for four out of the five choices, including to “stay in touch with friends” ($t=-10.738, df=1767, p<0.001$), “make plans with friends” ($t=-7.707, df=1768, p<0.001$), “make academic or professional contacts” ($t=-2.148, df=1323, p=0.032$), and “discuss an event, issue or cause with other people” ($t=-2.411, df=1769, p=0.016$). For political uses (see Table 20), males showed significantly more frequent use of Facebook than females for eight out of the ten choices, including to “read political news” ($t=3.560, df=1766, p<0.001$), “watch videos relevant to politics” ($t=4.299, df=1766, p<0.001$), “sign up as a

friend of politicians” ($t=3.707$, $df=1766$, $p<0.001$), “join a discussion group about a policy or political issue” ($t=2.563$, $df=1759$, $p=0.010$), “organize political and/or issue campaigns” ($t=2.238$, $df=1761$, $p=0.025$), “forward news items, video or audio materials about a political issue to friends” ($t=2.113$, $df=1254$, $p=0.035$), and “post comments about a political issue” ($t=4.232$, $df=1230$, $p<0.001$). For the last two items regarding speaking out, males and females do not significantly differ from “communicating with those who hold opinions similar to yours about a political issue” ($t=1.287$, $df=1759$, $p=0.198$), but males are significantly more likely to “argue with or persuade those who hold opinions opposite to yours about a political issue” ($t=4.482$, $df=1173$, $p<0.001$). Overall, females showed higher engagement of Facebook for general use, but males dominated in political communication via the new communication channel. Although females have caught up with males in political participation, the result suggests that there are still gender differences in political communication online, at least, through social networking sites such as Facebook.

Table 19 Facebook General Use

	Gender	N	Mean	S.D.
Making new friends	Male	631	2.19	1.026
	Female	1140	2.10	1.053
t=1.741, df=1329, p=0.082				
Staying in touch with friends	Male	631	4.00	0.965
	Female	1140	4.45	0.754
t=-10.738, df=1767, p<0.001				
Making plans with friends	Male	631	3.26	1.118
	Female	1140	3.67	1.039
t=-7.707, df=1768, p<0.001				
Making academic or professional contacts	Male	631	1.94	0.974
	Female	1140	2.05	0.994
t=-2.148, df=1323, p=0.032				
Discussing an event, issue or cause with other people	Male	631	2.74	1.208
	Female	1140	2.88	1.125
t=-2.411, df=1769, p=0.016				

Table 20 Facebook Political Use

	Gender	N	Mean	S.D
Reading political news	Male	630	1.88	1.057
	Female	1138	1.71	0.943
t=3.560, df=1766, p<0.001				
Watching videos relevant to politics	Male	630	1.86	0.989
	Female	1138	1.66	0.896
t=4.299, df=1766, p<0.001				
Signing up as a friend of politicians	Male	630	1.54	0.875
	Female	1138	1.39	0.781
t=3.707, df=1766, p<0.001				
Joining a discussion group about a policy or political issue	Male	630	1.50	0.845
	Female	1138	1.39	0.796
t=2.563, df=1759, p=0.010				
Organizing political and/or issue campaigns	Male	630	1.31	0.713
	Female	1138	1.24	0.626
t=2.238, df=1761, p=0.025				
Forwarding news items, video or audio materials about a political issue to friends	Male	630	1.89	1.106
	Female	1138	1.78	1.066
t=2.113, df=1254, p=0.035				
Posting comments about a political issue	Male	630	2.02	1.094
	Female	1138	1.79	1.032
t=4.232, df=1230, p<0.001				
Joining a political group or support a political cause	Male	630	1.73	0.973
	Female	1138	1.71	0.995
t=0.391, df=1317, p=0.696				
Communicating with those who hold opinions similar to yours about a political issue	Male	630	1.90	1.089
	Female	1138	1.83	1.058
t=1.287, df=1759, p=0.198				
Arguing with or persuading those who hold opinions opposite to yours about a political issue	Male	630	1.76	1.030
	Female	1138	1.54	0.912
t=4.482, df=1173, p<0.001				

RQ5: Do men and women differ in how they use and value Facebook to assess the climate of opinion and to speak out about the issue of same-sex marriage with their (1) close friends and their (2) broader circle of friends?

Research question 5 investigated whether men and women differ in how they use and value Facebook to assess the climate of opinion and to speak out about the issue of same-sex marriage with their (1) close friends and their (2) broader circle of friends. Table 21 shows females scored significantly higher than males in their perceived importance of assessing the climate of opinion about the issue of same-sex marriage than males toward both their “close friends” ($t=-5.077$, $df=1279$, $p<0.001$) and “broader circle of friends” ($t=-2.582$, $df=1293$, $p=0.010$). Although females showed significantly higher perceived importance of speaking out about the issue of same-sex marriage than males toward their “close friends” ($t=-5.550$, $df=1276$, $p<0.001$), they did not significantly differ in the perceived importance of speaking out toward their “broader circle of friends” ($t=-1.094$, $df=1293$, $p=0.274$) about the issue of same-sex marriage.

Table 21 Importance of Assessing the Climate of Opinion and Speaking out

Assessment	Gender	N	Mean	S.D.
Close friends	Male	629	2.41	1.183
	Female	1136	2.71	1.165
t=-5.077, df=1279, p<0.001				
Broader circle of friends	Male	627	1.91	0.993
	Female	1131	2.03	0.994
t=-2.582, df=1293, p=0.010				
Speaking out	Gender	N	Mean	S.D.
Close friends	Male	623	2.47	1.262
	Female	1129	2.82	1.256
t=-5.550, df=1276, p<0.001				
Broader circle of friends	Male	620	1.86	1.027
	Female	1113	1.91	1.041
t=-1.094, df=1293, p=0.274				

For assessing the climate of opinion among close friends about the issue of same-sex marriage, females (Table 22) indicated more frequent use of Facebook than males ($t=-3.186$, $df=1766$, $p=0.001$) and females also valued Facebook as more useful than males ($t=-2.484$, $df=1761$, $p=0.013$) to assess the climate of opinion about the issue of same-sex marriage.

Both of the results are significant. Among their broader circle of friends, similarly, females reported more frequent use of Facebook than males ($t=-3.035$, $df=1404$, $p=0.002$) and females valued Facebook as more useful than males ($t=-2.966$, $df=1758$, $p=0.003$) to assess the climate of opinion about the issue of same-sex marriage. Both of the results are significant.

Table 22 Assessment of the Climate of Opinion on Facebook about the Issue of Same-sex Marriage

Assessment	Friend type	Gender	N	Mean	S.D.
Actual use	Close friend	Male	631	1.79	0.977
		Female	1137	1.96	1.087
	t=-3.186, df=1766, p=0.001				
	Broader circle of friend	Male	631	1.84	1.044
		Female	1136	2.00	1.145
	t=-3.035, df=1404, p=0.002				
Perceived usefulness	Close friend	Male	628	2.17	1.118
		Female	1135	2.31	1.189
	t=-2.484, df=1761, p=0.013				
	Broader circle of friend	Male	626	2.08	1.147
		Female	1134	2.26	1.225
	t=-2.966, df=1758, p=0.003				

For speaking out about the issue of same-sex marriage among close friends (Table 23), females and males did not differ significantly in either actual speaking out or perceived usefulness of Facebook to speak out. This was true for both close friends and the broader circle of friends. To summarize, for assessment of climate of opinion on Facebook, in general, females have significantly higher concern about opinions either from close friends or their broader circle of friends because they are more sensitive to the maintenance of relationships than males. However, males and females did not differ in their willingness to speak out on Facebook.

Table 23 Willingness of Speaking out on Facebook about the Issue of Same-sex Marriage

Speaking out	Friend type	Gender	N	Mean	S.D.
Actual use	Close friend	Male	628	1.77	1.068
		Female	1137	1.85	1.132
	t=-1.548, df=1357, p=0.122				
	Broader circle of friend	Male	628	1.65	0.980
		Female	1135	1.64	0.986
	t=0.166, df=1300, p=0.868				
Perceived usefulness	Close friend	Male	621	2.01	1.182
		Female	1128	2.10	1.237
	t=-1.406, df=1747, p=0.160				
	Broader circle of friend	Male	623	1.92	1.151
		Female	1128	1.94	1.176
	t=-0.338, df=1307, p=0.735				

RQ6: Do men and women who perceive they are in the minority regarding the issue of same-sex marriage differ in their use of Facebook to speak out to their (1) close friends and (2) broader circle of friends?

Research question 6 asked: Do men and women who perceive they are in the minority regarding the issue of same-sex marriage differ in their use of Facebook to speak out to their (1) close friends and (2) broader circle of friends? Results (Table 24) show that males and females do not differ in their willingness to speak out about the issue of same-sex marriage when they perceive they are in the minority. This applies to both close friends and the broader circle of friends. Females were more likely to speak out to close friends when they perceive they are in the majority.

Table 24 Willingness to Speak Out about the Issue of Same-sex Marriage

Climate of Opinion	Friend type	Gender	N	Mean	S.D.
Majority	Close friend	Male	620	1.29	0.452
		Female	1131	1.34	0.475
	t=-2.431, df=1749, p=0.015				
	Broader circle of friend	Male	616	1.21	0.407
		Female	1130	1.24	0.427
	t=-1.445, df=1744, p=0.149				
Minority	Close friend	Male	627	1.20	0.403
		Female	1137	1.19	0.397
	t=0.583, df=1268, p=0.560				
	Broader circle of friend	Male	629	1.15	0.361
		Female	1136	1.13	0.339
	t=1.950, df=1763, p=0.051				

CHAPTER 5

DISCUSSIONS AND CONCLUSION

Summary of findings

Through the administration of online survey to the sample of 1,844 young adults, age 18 to 24, the study found differences in their use and perceived value of multiple communication channels such as traditional media, interpersonal discussions, and Facebook depending on circles of social relations at the two steps of spiral of silence. Beginning with the first step of spiral of silence, assessment of the climate of opinion about controversial political issues in general, traditional media were still perceived as the main source of information. Close friends were the most important group to assess for both general political issues and the issue of same-sex marriage in particular. For the issue of same-sex marriage, the respondents were no strangers to this issue but they used and gave more credits to interpersonal communication for assessing the climate of opinion from both close friends and broader circle of friends as well as speaking out about the controversial issue than Facebook followed by traditional media. The comparisons by gender showed that women engaged in Facebook more frequently for maintaining relationships with friends whereas men reported more political use of Facebook. Women had higher use and perceived value of Facebook to communicate with both their close friends and broader circle of friends about the issue of same-sex marriage than men for the two steps of spiral of silence, but there was only a

difference between genders for their willingness to speak out to close friends when assessing being in the majority. Thus, results of the study partially support previous studies.

RQ1: Do active users place higher value for assessing the climate of opinion about controversial political issues on Facebook compared with traditional media and interpersonal discussions?

Although the majority of respondents are actively engaged in Facebook, they do not yet regard this channel as the best way to assess the climate of opinion about controversial political issues among friends. Still, the significant difference of perceived values between Facebook active users and non-active users in the study provides evidence to support the idea that people who actively use Facebook get benefit from the use for assessing the climate of opinion. That is, people who engage in a certain communication channel will value the channel as more important and useful to assess the climate of opinion about controversial political issues (Gonzenbach et al., 1999; Guo & Moy, 1998; Ho & McLeod, 2008; Neuwirth, 2000; Shanahan et al., 2004). However, the finding is inconsistent with Liu and Fahmy's (2009) research that people regarded the Internet as more efficient for this purpose than traditional media. This might be due to the reason that young adults are not really politically interested and they prefer to use Facebook to maintain relationships with friends they already know rather than use it for seeking political information or, perhaps, they are less likely to

discuss controversial political topics seriously via the platform with friends. If they seldom use Facebook for political communication, there would be little relevant content about controversial political issues. Therefore, they would rate Facebook less important for assessing the climate of opinion. Overall, Facebook is an appropriate and promising technology for communicating with one's friends, but there may be insufficient content about politics for discussions.

RQ2: How important is it for individuals to assess the climate of opinion: (1) for one's close friends; (2) for one's broader circle of friends; (3) for one's community or state?

Individuals think of assessing the climate of opinion from their close friends more than others who are from broader or distant social circles. The result is in accordance with previous research (Neuwirth & Frederick, 2004; Salmon and Kline, 1983). However, surprisingly, the respondents considered the assessment of the climate of opinion from one's community or state as slightly more important than from their broader circle of friends.

Perhaps the broader circle of friends from Facebook helps people connect with friends such as former classmates, more distant friends, and those keeping in touch with occasionally, but communication between individuals and this circle of friends might not happen so frequently even if they are "friends" on Facebook or they do not talk about politics on the channel. It is also possible that people living in the same community or state be located closer to one's

social circle than one's broader circle of friends linked through Facebook.

H1: Individuals will be more likely to speak out via Facebook than via other channels either among their close friends or their broader circle of friends about the issue of same-sex marriage.

By comparing actual use and perceived usefulness of the channels, the study partially confirms the hypothesis that either among close friends or one's broader circle of friends, people rely on interpersonal communication most to express their opinion about the issue of same-sex marriage. Ranking below interpersonal channels is Facebook, which was rated more highly than traditional channels such as writing letters to editors of newspapers or TV programs, calling in to radio programs, wearing campaign buttons, putting bumper stickers on the car, joining campaigns for the issue. The easy access to Facebook increases people's opportunities to speak out. However, interpersonal channels are still the preferred method. The possible explanations for the contrast with previous studies (Ho & McLeod, 2008; Liu & Fahmy, 2009) could be that those studies measured one's willingness to speak out to strangers publicly instead of measuring the willingness to speak out among friends with different social relations. Further, in an anonymous setting for communication about controversial issues such as same-sex marriage, the computer-mediated environment could moderate one's fear of isolation, which is one of the crucial elements influencing individual willingness to speak out

in public (Ho & McLeod, 2008). In the current study, the respondents were asked about their willingness to speak to people they have built relationships with, so they would speak out in a more direct way, namely, via interpersonal communication.

H2: Individuals who perceive they are in the minority regarding the issue of same-sex marriage either among their close friends or their broader circle of friends will be more likely to speak out to close friends on Facebook than to their broader Facebook circle of friends.

By comparing individuals' willingness to speak out about the issue of same-sex marriage with two circles of friends when they perceive they are in the minority, results of the study provide evidence that people will be more likely to speak out on the issue to their close friends on Facebook than to their broader Facebook circle of friends. The findings confirm the existing research (Neuwirth & Frederick, 2004; Neuwirth, et al., 2007; Moy et al., 2001) that people have higher concern about opinions from their immediate circle of friends and family. In other words, while facing a politically controversial issue, they will carefully assess close friends' opinions about the issue and they also will reveal their own opinions to this circle of friends. This is similar to Lenart's (1994) research that people will not remain silent when they perceive most of their close friends have an opposite opinion to them. People who are more likely to speak out among their broader circle of friends are also more

likely to speak out to their close friends. Still, knowing people who tend to speak out among close friends does not necessarily predict their willingness to speak out among their broader circle of friends. The possible explanation could be that individuals' fear of isolation would be reduced when speaking to friends who are closer to them. Noelle-Neumann (1993) suggests that the effect of spiral of silence works well when the subject is in a public situation whereas the study further suggests that the level of social relationship, specifically, dealing with the "friends" on Facebook should be taken into consideration when applying the theory on the new medium channel such as Facebook and other social networking sites.

RQ4: Do men and women differ in their general and political uses of Facebook?

It is noteworthy twice as many females as males responded to the survey for this study. This shows women have higher interest in Facebook and topics related to it because the core of Facebook is to make people connect to each other. The female respondents also reported higher scores on every item of general use of Facebook whereas male respondents scored higher on all of the items for political use. The evidence indicates that, obviously, women use Facebook more frequently than men for maintaining interpersonal relationships with friends and that women use Facebook primarily to stay in touch and make plans with friends. In contrast, men use Facebook more frequently than women for political purposes such as seeking political information on it so that men still dominate the behavior of political

communication. In spite of the shift in communication channels from traditional media to online media, men always show more active participation and interests in joining in political activities (Harp & Tremayne, 2006; Smith & Rainie, 2008). The gender disparity in political engagement still exists even if both genders have equally easy access to communicate with and participate in political activities on social networking sites.

RQ5: Do men and women differ in how they use and value Facebook to assess the climate of opinion and to speak out about the issue of same-sex marriage with their (1) close friends and their (2) broader circle of friends?

Evidence indicates the inherent socio-psychological difference between men's and women's behaviors in information seeking and opinion expression relevant to controversial political issues (Eagly, 1987; Verba, et al., 1997). When interpersonal relationships are involved, women appear to be more sensitive to others' perceptions and uphold the harmony of ties with people who are close to them (Cross & Madson, 1997). In contrast to women's sensitivity to interpersonal relationships, men are more likely to express their opinion and show their stance confidently about politics to others as the spiral of silence proposes.

Interestingly, for the issue of same-sex marriage, female respondents showed more concern about the issue and would be more likely to both assess the climate of opinion and speak out about their opinion than male respondents. This is opposite to the prediction of spiral of

silence. However, men and women only differ in their assessment of the climate of opinion and willingness to speak out about the issue of same-sex marriage when they communicate with their close friends, not with their broader circle of friends. Bergen (1993) has noted that issues such as abortion are morally loaded and deal with issues of high interest to women. Same-sex marriage may be similar. Thus, women have more interest in discussing these controversial topics. Secondly, although women exceeded men in use and perceived value of Facebook for assessment of the climate of opinion, there were no gender differences for willingness to speak out.

In short, it might be that people care less about their broader circle of friends and have less communication with them despite Facebook linkages.

RQ6: Do men and women who perceive they are in the minority regarding the issue of same-sex marriage differ in their use of Facebook to speak out to their (1) close friends and (2) broader circle of friends?

Spiral of silence suggests that people's willingness to speak out about a controversial political issue depends on their assessment of being in the majority or minority. This study investigates people's willingness to speak out about the issue of same-sex marriage to two different circles of friends. Results show no significant difference between men and women to speak out about the issue when they perceived being in the minority either among close

friends or their broader circle of friends. The explanation might be that even though men showed slightly higher scores on willingness to speak out when perceived being in the minority as spiral of silence suggests, women felt that they were more relevant to the issue which might somewhat increase their willingness to speak out from the minority group (Salmon & Neuwirth, 1987; Spencer & Croucher, 2008). Moreover, spiral of silence theory has often been tested within an unfamiliar social group as a number of existing studies have done to compare gender difference (Eagly, 1987), but the situation for opinion expression in the present study was to one's friends. As a consequence, the result produces different prediction from the spiral of silence theory.

Implications of the findings

Results of the study contribute to understanding how spiral of silence theory might operate in an age of social media such as Facebook. For the first step of spiral of silence, the assessment of the climate of opinion, individuals' choice of communication channels has a positive relationship with their engagement with the channel. The more frequently they use a channel to communicate, the higher perceived value they confirm for assessing the climate of opinion. In particular, people who have higher concern about a controversial political issue would be more likely to assess the climate of opinion about the issue and also regard the climate of opinion about the issue from the immediate circle of social relation that is most

valuable. These variables can be good predictors and added to the first dimension of spiral of silence if measuring the behavior of assessing the climate of opinion.

Second, about willingness to speak out about controversial issues, the study shows a different result from what spiral of silence theory predicts because spiral of silence works with the premise that an individual is in a public situation in which the fear of isolation from the majority opinion group will be a decisive factor influencing personal willingness to speak out about a controversial issue in a public environment. However, this study investigates the second dimension of the spiral of silence theory by comparing three major channels for opinion expression such as traditional media, interpersonal discussion, and Facebook under the condition that an individual is in a familiar situation and asks their willingness to speak out about a controversial political issue to friends. Results indicate that people are not afraid to express their own opinion to friends, especially, for close friends and they think that it is important to exchange opinions about issues relevant to them with friends. As far as gender differences are concerned, the statement that women have caught up with men in political communication is not confirmed, at least, for the young adult group, age 18 to 24. The young generation shows cognitively low interest in participating in political discussions either in online or off-line settings, but they are adopting cutting-edge technologies.

Limitations of the study

In interpreting the present results, readers should consider some limitations to the study.

First, the sample population only focuses on educated young adults, 18 to 24, so that the results cannot be generalized to other age groups of the population to predict their political communication via Facebook and other social networking sites. Next, the study tests the second step of spiral of silence in an online setting and limits respondents' willingness to speak out about the issue of same-sex marriage to their "friends" on Facebook instead of general people in public. Different social relations produce different predictions than those spiral of silence theory initially proposes. Nevertheless, it is also a strength of the study that examines people's political communication with the new circle of interpersonal relationship brought by the new media, Facebook. Third, the selection of the controversial political issue, same-sex marriage, for comparisons between genders may have unequal weights on men's and women's concern and motivation to communicate about the issue with friends. Likewise, it is a strength that women, who are said to fall behind in political discussions, will be more likely to communicate with their friends about politically controversial issues that are relevant to them.

Suggestions for future study

Much research about spiral of silence has been done during the period when people had limited communication channels either to assess the climate of opinion or speak out about

controversial political issues. This study found value in applying the theory to political communication with friends on Facebook or other social networking sites. In order to determine more robust applications for the spiral of silence theory, future studies could be done by increasing the sample size to all age groups so that the results would permit generalization to a larger population. A more specific measurement such as an experimental design to examine whether people's socio-psychological characteristics influence the effect of spiral of silence is also suggested. Third, the comparison among channels might be extended to precise channels rather than generally categorizing the channels into three clusters — traditional media, interpersonal communication, and Facebook. Last, demographic variables other than gender such as social economic status, education, along with comparisons of multiple political issues could be taken into consideration for testing the spiral of silence theory.

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APPENDIX A

INSTITUTIONAL REVIEW BOARD REVIEW

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office for Responsible Research
Vice President for Research
1138 Pearson Hall
Ames, Iowa 50011-2207
515 294-4566
FAX 515 294-4267

Date: 3/15/2011

To: Kuan-Ju Chen
158G University Village
Ames, Iowa 50010

CC: Dr. Eric Abbott
204C Hamilton Hall

From: Office for Responsible Research

Title: A test of the spiral of silence theory on young adults' use of social networking sites for political purposes

IRB Num: 11-011

Submission Type: New **Exemption Date:** 3/14/2011

The project referenced above has undergone review by the Institutional Review Board (IRB) and has been declared exempt from the requirements of the human subject protections regulations as described in 45 CFR 46.101(b). The IRB determination of exemption means that:

- You do not need to submit an application for annual continuing review.
- You must carry out the research as proposed in the IRB application, including obtaining and documenting informed consent if you have stated in your application that you will do so or if required by the IRB.
- Any modification of this research should be submitted to the IRB on a Continuing Review and/or Modification form, prior to making any changes, to determine if the project still meets the federal criteria for exemption. If it is determined that exemption is no longer warranted, then an IRB proposal will need to be submitted and approved before proceeding with data collection.

Please be sure to use only the approved study materials in your research, including the recruitment materials and informed consent documents that have the IRB approval stamp.

Please note that you must submit all research involving human participants for review by the IRB. Only the IRB may make the determination of exemption, even if you conduct a study in the future that is exactly like this study.

APPENDIX B**QUESTIONNAIRE: THE POLITICAL USES OF SOCIAL NETWORKING SITES****I. Demographics**

1. What is your age?

_____ [If the respondent is under 18, the survey will be terminated.]

2. What is your gender?

1= Male

2= Female

3. Are you a U.S. citizen?

1= Yes

2= No

4. Regardless of your citizenship, are you a registered voter?

1= Yes

2= No

5. Have you actually voted in any election in the past two years?

1= Yes

2= No

6. Do you currently have a profile on Facebook?

1= Yes

2= No [If the respondent does not have any profile on Facebook, the survey will be terminated.]

7. In the past week, how often do you check your profile on Facebook?

1= Do not check at all

2= Once a week

3= Every few days

4= About once a day

5= Several times a day

II. General uses

Please indicate the extent to which you use Facebook for the general purposes listed below:

(8) Make new friends

1= Never

2= Seldom

3= Sometimes

4= Frequently

5= Very frequently

(9) Stay in touch with friends

1= Never

2= Seldom

3= Sometimes

4= Frequently

5= Very frequently

(10) Make plans with friends

1= Never

2= Seldom

3= Sometimes

4= Frequently

5= Very frequently

(11) Make academic or professional contacts

1= Never

2= Seldom

3= Sometimes

4= Frequently

5= Very frequently

(12) Discuss an event, issue or cause with other people

1= Never

2= Seldom

3= Sometimes

4= Frequently

5= Very frequently

- Political uses

Please indicate the extent to which you use Facebook for each of the political purposes listed below.

(13) Read political news

1= Never

2= Seldom

3= Sometimes

4= Frequently

5= Very frequently

(14) Watch videos relevant to politics

1= Never

2= Seldom

3= Sometimes

4= Frequently

5= Very frequently

(15) Sign up as a friend of politicians

1= Never

2= Seldom

3= Sometimes

4= Frequently

5= Very frequently

(16) Join a discussion group about a policy or political issue

- 1= Never
- 2= Seldom
- 3= Sometimes
- 4= Frequently
- 5= Very frequently

(17) Organize political and/or issue campaigns

- 1= Never
- 2= Seldom
- 3= Sometimes
- 4= Frequently
- 5= Very frequently

(18) Forward news items, video or audio materials about a political issue to friends

- 1= Never
- 2= Seldom
- 3= Sometimes
- 4= Frequently
- 5= Very frequently

(19) Post comments about a political issue

- 1= Never
- 2= Seldom
- 3= Sometimes
- 4= Frequently
- 5= Very frequently

(20) Join a political group or support a political cause

- 1= Never
- 2= Seldom
- 3= Sometimes
- 4= Frequently

5= Very frequently

(21) Communicate with those who hold opinions similar to yours about a political issue

1= Never

2= Seldom

3= Sometimes

4= Frequently

5= Very frequently

(22) Argue with or persuade those who hold opinions opposite to yours about a political issue

1= Never

2= Seldom

3= Sometimes

4= Frequently

5= Very frequently

- Communication channels

Please rate the extent to which each of the following is useful to you in finding out what the majority opinion is about controversial political issues.

(23) Traditional media such as newspapers, magazines, TV, and radio

1= Not useful at all

2= A little bit useful

3= Somewhat useful

4= Very useful

5= Extremely useful

(24) Interpersonal discussions such as face-to-face conversations, telephone calls, text messaging, e-mails, and blogs

1= Not useful at all

2= A little bit useful

3= Somewhat useful

4= Very useful

5= Extremely useful

(25) Facebook

1= Not useful at all

2= A little bit useful

3= Somewhat useful

4= Very useful

5= Extremely useful

- Circles of relationship

Please rate the extent to which it is important to you to find out what each of the following groups are thinking about controversial political issues.

(26) How important is it to you to find out what your close friends (i.e., family members, very close friends, and significant others) are thinking about controversial political issues?

1= Not important at all

2= A little bit important

3= Somewhat important

4= Very important

5= Extremely important

(27) How important is it to you to find out what your broader circle of friends (i.e., former classmates, more distant friends, and those you keep in touch with occasionally but not your close friends) are thinking about controversial political issues?

1= Not important at all

2= A little bit important

3= Somewhat important

4= Very important

5= Extremely important

(28) How important is it to you to find out what people in your community or state are

thinking about controversial political issues?

- 1= Not important at all
- 2= A little bit important
- 3= Somewhat important
- 4= Very important
- 5= Extremely important

- Issue relevance

The following questions pertain to your communication about the issue of same-sex marriage.

29. How would you rank your concern for the issue of same-sex marriage?

- 1= No concern at all
- 2= Low concern
- 3= Some concern
- 4= High concern
- 5= Very high concern

30. How much do you know about the issue of same-sex marriage?

- 1= No idea at all
- 2= I know only a little
- 3= I know a fair amount
- 4= I know the issue well
- 5= I know a lot about the issue

31. How often do you see coverage of the same-sex marriage issue in the mass media?

- 1= Never
- 2= Seldom
- 3= Sometimes
- 4= Frequently
- 5= Very Frequently

32. How often do you hear your friends talk about the issue of same-sex marriage?

- 1= Never
- 2= Seldom
- 3= Sometimes
- 4= Frequently
- 5= Very Frequently

III. Assessment of climate of opinion- Close friends

The following questions concern communication you have with your close friends such as family members, very close friends, and significant others regarding the issue of same-sex marriage.

(33) How important is it for you to find out what your close friends are thinking about the issue of same-sex marriage?

- 1= Not important at all
- 2= A little bit important
- 3= Somewhat important
- 4= Very important
- 5= Extremely important

How often have you used each of the following channels to find out what your close friends are thinking about the issue of same-sex marriage?

34) Facebook

- 1= Never
- 2= Seldom
- 3= Sometimes
- 4= Frequently
- 5= Very frequently

35) Interpersonal discussions such as face-to-face conversations, telephone calls, text messaging, e-mails, and blogs

- 1= Never
- 2= Seldom
- 3= Sometimes

4= Frequently

5= Very frequently

36) Traditional channels such as observing them writing letters to editors of newspapers or TV programs, calling in to radio programs, wearing campaign buttons, putting bumper stickers on the car, joining campaigns for the issue, and so forth

1= Never

2= Seldom

3= Sometimes

4= Frequently

5= Very frequently

Please rate the extent to which each of the following information channels has been useful to you in finding out what your close friends are thinking about the same-sex marriage issue.

37) Facebook

1= Not useful at all

2= A little bit useful

3= Somewhat useful

4= Very useful

5= Extremely useful

38) Interpersonal discussions such as face-to-face conversations, telephone calls, text messaging, e-mails, and blogs

1= Not useful at all

2= A little bit useful

3= Somewhat useful

4= Very useful

5= Extremely useful

39) Traditional channels such as observing them writing letters to editors of newspapers or TV programs, calling in to radio programs, wearing campaign buttons,

putting bumper stickers on the car, joining campaigns for the issue, and so forth

1= Not useful at all

2= A little bit useful

3= Somewhat useful

4= Very useful

5= Extremely useful

- Assessment of climate of opinion- Broader circle of friends

The following questions concern communication you have with your broader circle of friends such as former classmates, more distant friends, and those you keep in touch with occasionally but not your close friends regarding the issue of same-sex marriage.

(40) How important is it to you to find out what your broader circle of friends are thinking about the issue of same-sex marriage?

1= Not important at all

2= A little bit important

3= Somewhat important

4= Very important

5= Extremely important

How often have you used each of the following to learn what your broader circle of friends are thinking about the issue of same-sex marriage?

41) Facebook

1= Never

2= Seldom

3= Sometimes

4= Frequently

5= Very frequently

42) Interpersonal discussions such as face-to-face conversations, telephone calls, text messaging, e-mails, and blogs

1= Never

2= Seldom

3= Sometimes

4= Frequently

5= Very frequently

43) Traditional channels such as observing them writing letters to editors of newspapers or TV programs, calling in to radio programs, wearing campaign buttons, putting bumper stickers on the car, joining campaigns for the issue, and so forth

1= Never

2= Seldom

3= Sometimes

4= Frequently

5= Very frequently

Please rate the extent to which each of the following channels is useful to you in finding out what your broadest circle of friends are thinking about the issues of same-sex marriage:

44) Facebook

1= Not useful at all

2= A little bit useful

3= Somewhat useful

4= Very useful

5= Extremely useful

45) Interpersonal discussions such as face-to-face conversations, telephone calls, text messaging, e-mails, and blogs

1= Not useful at all

2= A little bit useful

3= Somewhat useful

4= Very useful

5= Extremely useful

46) Traditional channels such as observing them writing letters to editors of

newspapers or TV programs, calling in to radio programs, wearing campaign buttons, putting bumper stickers on the car, joining campaigns for the issue, and so forth

1= Not useful at all

2= A little bit useful

3= Somewhat useful

4= Very useful

5= Extremely useful

- Opinion expression- Close friends

The following questions pertain to how you communicate about the issue of same-sex marriage with your close friends (family, very close friends, significant others, and the like):

(47) How important is it to you to express your opinion about the issue of same-sex marriage to your close friends?

1= Not important at all

2= A little bit important

3= Somewhat important

4= Very important

5= Extremely important

How often have you used each of the following channels to express your opinion to your close friends about the issue of same-sex marriage?

48) Facebook

1= Never

2= Seldom

3= Sometimes

4= Frequently

5= Very frequently

49) Interpersonal discussions such as face-to-face conversations, telephone calls, text messaging, e-mails, and blogs

1= Never

2= Seldom

3= Sometimes

4= Frequently

5= Very frequently

50) Traditional channels such as writing letters to editors of newspapers or TV programs, calling in to radio programs, wearing campaign buttons, putting bumper stickers on the car, joining campaigns for the issue, and so forth

1= Never

2= Seldom

3= Sometimes

4= Frequently

5= Very frequently

Please rate the extent to which each of the following is useful to you in expressing your political opinion to your close friends about the issue of same-sex marriage.

51) Facebook

1= Not useful at all

2= A little bit useful

3= Somewhat useful

4= Very useful

5= Extremely useful

52) Interpersonal discussions such as face-to-face conversations, telephone calls, text messaging, e-mails, and blogs

1= Not useful at all

2= A little bit useful

3= Somewhat useful

4= Very useful

5= Extremely useful

53) Traditional channels such as writing letters to editors of newspapers or TV programs, calling in to radio programs, wearing campaign buttons, putting bumper

stickers on the car, joining campaigns for the issue, and so forth

1= Not useful at all

2= A little bit useful

3= Somewhat useful

4= Very useful

5= Extremely useful

54. Let's suppose you have learned that **most of your close friends** hold a political view about same-sex marriage that is **similar** to your own. Which of the following comes closest to describing what you would do on Facebook?

1=Avoid using Facebook to express my opinion about the issue

2=Indicate to them that you agree with them only if they ask you for your opinion

3=Share links with them that reflect their view of the issue

4=Tell them that you agree with them

55. Let's suppose you have learned that **most of your close friends** hold a political view about same-sex marriage that is **opposite** to your own. Which of the following comes closest to describing what you would do on Facebook?

1=Avoid using Facebook to express my opinion about the issue

2=Indicate to them that you disagree with them only if they ask you for your opinion

3=Share links with them that reflect their view of the issue

4=Share links with them that show an opposite view of the issue

5=Tell them that you disagree with them

- Opinion expression- Broad circle of friends

The following questions pertain to how you communicate about the issue of same-sex marriage with your broad circle of friends (former classmates, more distant friends, and those you keep in touch with occasionally but not your close friends):

(56) How important is it to you to express your opinion about the issue of same-sex marriage to your broad circle of friends?

1= Not important at all

2= A little bit important

3= Somewhat important

4= Very important

5= Extremely important

How often have you used each of the following channels to express your opinion to your broader circle of friends about the issue of same-sex marriage?

57) Facebook

1= Never

2= Seldom

3= Sometimes

4= Frequently

5= Very frequently

58) Interpersonal discussions such as face-to-face conversations, telephone calls, text messaging, e-mails, and blogs

1= Never

2= Seldom

3= Sometimes

4= Frequently

5= Very frequently

59) Traditional channels such as writing letters to editors of newspapers or TV programs, calling in to radio programs, wearing campaign buttons, putting bumper stickers on the car, joining campaigns for the issue, and so forth

1= Never

2= Seldom

3= Sometimes

4= Frequently

5= Very frequently

Please rate the extent to which each of the following is useful to you in expressing your political opinion to your broader circle of friends about the issue of same-sex marriage.

60) Facebook

- 1= Not useful at all
- 2= A little bit useful
- 3= Somewhat useful
- 4= Very useful
- 5= Extremely useful

61) Interpersonal discussions such as face-to-face conversations, telephone calls, text messaging, e-mails, and blogs

- 1= Not useful at all
- 2= A little bit useful
- 3= Somewhat useful
- 4= Very useful
- 5= Extremely useful

62) Traditional channels such as writing letters to editors of newspapers or TV programs, calling in to radio programs, wearing campaign buttons, putting bumper stickers on the car, joining campaigns for the issue, and so forth

- 1= Not useful at all
- 2= A little bit useful
- 3= Somewhat useful
- 4= Very useful
- 5= Extremely useful

63. Let's suppose that regarding the issue of same-sex marriage, you have found out that most of your broader circle of friends holds a political view that is similar to your own. Which of the following comes closest to describing what you would do on Facebook?

- 1= Avoid using Facebook to express my opinion about the issue
- 2= Indicate to them that you agree with them only if they ask you for your opinion
- 3= Share links with them that reflect their view of the issue
- 4= Tell them that you agree with them

64. Let's suppose that regarding the issue of same-sex marriage, you have found out that most

of your broader circle of friends holds a political view that is opposite to your own. Which of the following comes closest to describing what you would do on Facebook?

- 1=Avoid using Facebook to express my opinion about the issue
- 2=Indicate to them that you disagree with them only if they ask you for your opinion
- 3=Share links with them that reflect their view of the issue
- 4=Share links with them that show an opposite view of the issue
- 5=Tell them that you disagree with them

ACKNOWLEDGEMENT

I would like to thank all of my family members, especially my mother and my aunt, for their fully support to make my dream come true. Also, I would like to thank my major professor, Eric Abbott, for his inspiration and encouragement throughout my studies. Your dedication to me during this process was greatly needed and greatly appreciated. I would have never achieved the goal without all of your help. Thank you.